

1/23

BAL human cDNA

5'UTR:

GGGCTTCGTGTTCCCTGGGTGCTGACCGTGCCTCCCCGCCGCCGAGGACTTAGAGCTCTGGAAGT
AGCTCTCCAGCTTCCTTCGTACTCGGGGGCCGGAAGTGTACACCCGCACGAGGAGCGGGGACGGC
GGGCGCAGAAGTGGGCCACCATATCTGGAACTACAGTCTATGCTTTGAAGCGCAAAGGGAATA
AACATTTAAAGACTCCCCCGGGGACCTGGAGG

Coding: alternatively spliced sequence in bold characters

ATGGACTTTTCCATGGTGGCCGGAGCAGCAGCTTACAATGAAAAATCAGGTAGGATTACCTCGCT
CTCACTCTTTGTTTCAGAAAGTCTTTGCTCAGATCTTTCTCAGTGGAGAAAGGGGAATACAG
AAGAATGTCTCCCTACAAGTGCTCAGAGACTGGTGCTCTTGGAGAAAATATAGTTGGCAAAAT
TCCCATTAACCACAATGACTTCAAAAATTTTAAAAAATAATGAGCGTCAGCTGTGTGAAGTCTTCCA
GAATAAGTTTGGCTGTATCTCTACCCTGGTCTCTCCAGTTTCAGGAAGGCAACAGCAAATCTCTGCA
AGTGTTTCAGAAAAATGCTGACTCCTAGGATAGAGTTATCAGTCTGGAAAGATGACCTCACCACAC
ATGCTGTTGATGCTGTGGTGAATGCAGCCAATGAAGATCTTCTGCATGGGGGAGGCTGGCCCTGG
CCCTGGTAAAAGCTGGTGGATTTGAAATCCAAGAAGAGAGCAAACAGTTTGTGTCAGATATGGT
AAAGTGTCAGCTGGTGAGATAGCTGTCACGGGAGCAGGGAGGCTTCCCTGCAAACAGATCATCCA
TGCTGTTGGGCTCGGTGGATGGAATGGGATAAACAGGGATGTACTGGAAAGCTGCAGAGGGCCA
TTGTAAGTATTCTGAATTATGTCATCTATAAAAAATACTCACATTAAGACAGTAGCAATTCCAGCCT
TGAGCTCTGGGATTTTTCAGTTCCCTCTGAATTTGTGTACAAAGACTATTGTAGAGACTATCCGGGT
TAGTTTGCAAGGGAAGCCAATGATGAGTAATTTGAAAGAAATTCACCTGGTGAGCAATGAGGACC
CTACTGTTGCTGCCTTTAAAGCTGCTTCAGAATTCATCCTAGGGAAGAGTGAGCTGGGACAAGAAA
CCACCCCTTCTTTCAATGCAATGGTCGTGAACAACCTGACCCTCCAGATTGTCCAGGGCCACATTG
AATGGCAGACGGCAGATGTAATTGTTAATTCTGTAAACCCACATGATATTACAGTTGGACCTGTGG
CAAAGTCAATTCTACAACAAGCAGGAGTTGAAATGAAATCGGAATTTCTTGCCACAAAGGCTAAA
CAGTTTCAACGGTCCCAGTTGGTACTGGTCACAAAAGGATTTAACTTGTCTGTAAATATATATAC
CATGTACTGTGGCATTGAGAATTTCCCTAAACCTCAGATATTAACATGCAATGAAGGAGTGTGTTG
GAAAAATGCATTGAGCAAAATATACTTCCATTTCTTTCTGCCCTTGGGACTGGAAACATGGAA
ATAAAGAAGGAAACAGCAGCAGAGATTTTGTGTTGATGAAGTTTAACTTTGCCAAAGACCATGT
AAAACACCAGTTAACTGTAAAATTTGTGATCTTTCCAACAGATTTGGAGATATATAAGGCTTTTCAG
TTCTGAAATGGCAAAGAGGTCCAAGATGCTGAGTTTGAACAATTACAGTGTCCCCCAGTCAACCA
GAGAGGAGAAAAGAGAAAATGGGCTTGAAGCTAGATCTCCTGCCATCAATCTGATGGGATTC AAC
GTGGAAGAGATGTAGTGAGGCCACGCATGGATCCAAAGAATCCTGAGTCTCCAGAACCACCACA
TCATTTGAGAATAATCATATTCTGTACCTTGGGAGAAAGGAACATGACATTTTGTCTCAGCTTCAGA
AACTTCAAGTGTCTCCATCACAGAAATTATCAGCCCAGGAAGGACAGAGTTAGAGATTGAAGGA
GCCCGGGCTGACCTCATTGAGGTGGTTATGAACATTGAAGATATGCTTTGTAAAGTACAGGAGGA
AATGGCAAGGAAAAAGGAGCGAGGCCTTTGGCGCTCGTTAGGACAGTGGACTATTTCAGCAACAAA
AAACCCAAGACGAAATGAAAGAAAATATCATATTTCTGAAATGTCCTGTGCCTCCAACCTCAAGAG
CTTCTAGATCAAAAGAAACAGTTTGAAAAATGTGGTTTGCAGGTTCTAAAGGTGGAGAAGATAGA
CAATGAGGTCTTATGGCTGCCTTTCAAAGAAAGAAGAAAATGATGGAAGAAAACCTGCACAGGC
AACCTGTGAGCCATAGGCTGTTTCAGCAAGTCCCATAACAGTTCTGCAATGTGGTATGCAGAGTTG
GCTTTCAAAGAAATGTACTCGACACCTTGCATCCAAAATACGGAGCTGGCATATACTTCACCAAGA
ACCTCAAAAACCTGGCAGAGAAGGCCAAGAAAATCTCTGCTGCAGATAAGCTGATCTATGTGTTT
GAGGCTGAAGTACTCACAGGCTTCTTCTGCCAGGGACATCCGTTAAATATTGTTCCCCACCCTG
AGTCCTGGAGCTATAGATGGTCATGACAGTGTGGTTGACAATGTCTCCAGCCCTGAAACCTTTGTT
ATTTTTAGTGGCATGCAGGCTATACCTCAGTATTTGTGGACATGCACCCAGGAATATGTACAGTCA
CAAGATTACTCATCAGGACCAATGAGACCTTTGCACAGCATCCTTGGAGGGGATTTCGCAAGTGG
CAGCCCTGTTGATTAA

Fig. 1

2/23

3' UTR

TCTCTACATCATTTTAAACAGCTGGTATGGCCTTACCTTGGGTGAACTAACCAAATAATGACCATCG
 ATGGCTCAAAGAGTGGCTTGAATATATCCCATGGGTATCTGTATGGACTGACTGGGTATTGAAA
 GGACTAGCCACATACTAGCATCTTAGTGCCTTTATCTGTCTTTATGTCTTGGGGTTGGGGTAGGTAG
 ATACCAAATGAAACACTTTTCAGGACCTTCCTTCCTCTTGCAGTTGTTCTTTAATCTCCTTTACTAGA
 GGAGATAAATATTTTGCATATAATGAAGAAATTTTTCTAGTATATAACGCAGGCCTTTTATTTTCTA
 AAATGATGATAGTATAAAAAATGTTAGGATAACAGAATGATTTTAGATTTTCCAGAGAATATTATAA
 AGTGCTTTAGGTATGAAAATAAATCATCTTGTCTGATTAAAAA

BAL human protein: alternatively spliced (Bold characters)

MDFSMVAGAAAYNEK**SGRITSLSLLFQKVFAQIFPQWRKGNT**ECLPYKCSETGALGENYSW
 QIPINHNDFKILKNNERQLCEVLQNKFGCISTLVSPVQEGNSKSLQVFRKMLTPRIELSVWKDDLTT
 HAVDAVVNAANEDLLHGGGLALALVKAGGFEIQEESKQFVARYGKVSAGEIAVTGAGRLPCKQIIHAV
 GPRWMEWDKQGCTGKLQRAIVSILNYVIYKNTHIKTVAI PALSSGIFQFPLNLCTKTIVETIRVSLQKPK
 MMSNLKEIHLVSNEDPTVAAFKAASEFILGKSELGQETTPSFNAMVVNNLTQIVQGHIEWQTADVIVN
 SVNPHDITVGPVAKSILQQAGVEMKSEFLATKAKQFQRSQLVLVTKGFNLFCKYIYHVLWHSEFPKPKQI
 LKHAMKECLEKCIEQNITSISFPALGTGNMEIKKETAAEILFDEVLTFAKD
 HVKHQLTVKFVIFPTDLEIYKAFSSEMAKRSKMLSLNNYSVPQSTREEKRENGLEARSPAINLMGFNVE
 EMYEAHAWIQRILSLQNHIIENNHIYLGKREHDILSQLQKTSSVSITEIISPGRTELEIEGARADLIEVV
 MNIEDMLCKVQEEMARKKERGLWRS LGQWTIQQKTQDEMKENIIFLKCPVPPTQELLDQKKQFEKC
 GLQVLKVEKIDNEVLMAAFQKKKMMEEKLHRQPVSHRLFQQVPYQFCNVVCRVGFQFORMYSTPCDP
 KYGAGIYFTKNLKNLAEKAKKISAADKLIYVFEEVLTGFFCQGHPLNIVPPPLSPGAIDGHDSVVDNVS
 SPETFVIFSGMQAIPQYLWTCTQEYVQSQDYSSGPMRPFQAHPWRGFAFGSPVD

Fig. 1 (continued)

3/23

BAL mouse cDNA:

5' UTR

AGGAACGGAAGTTTGGCGGGAACCCGGATTCCCAGGTTCAAGGCTCTCAAGGTTGGAGCGGAATA
GAGGGAAACAGGCCACCATCTCCTCGATCTACAGACTACACTTGGAAACACAAACAATATAAAT
ATCTGAAGACCCACGTGGGACCTGAAGAATGGCCTATTAC

Coding region (shorter form only)

ATGGATACATGGGCGGCAGCTCCCGCCGAAAGACCAGCCAACAATTCTCTTGAAGAACATTATAG
ATGGCAAATTCCCATTAAACACAATGTCTTCGAAATTTTAAAGAGCAATGAGAGTCAGCTATGTGA
AGTCCTCCAAAATAAGTTTGGATGCATCTCTACCCTGAGCTGTCCAACCTCTAGCAGGGAGCAGCTC
TCCTGCTCAGAGAGTCTTCAGAAGGACCCTGATCCCTGGGATAGAGTTATCTGTCTGGAAGGATGA
CCTTACCAGACACGTTGTTGATGCTGTGGTGAACGCAGCCAATGAAAACCTTTTGCATGGAAGTGG
CCTGGCCGGAAGCTTGGTGAAAACCTGGTGGCTTTGAAATCCAAGAAGAGAGCAAAAGAATCATTG
CCAACGTTGGTAAATCTCAGTTGGTGGAAATCGCTATCACCGGTGCGGGGAGACTTCCTTGCCATT
TGATTATCCATGCGGTTGGACCTCGGTGGACAGTTACGAACAGCCAGACAGCTATCGAATTACTGA
AATTTGCCATTAGGAACATTCTAGATTATGTACCAAAATATGATCTACGCATTAAGACAGTAGCAA
TTCCAGCCCTGAGCTCTGGAATTTTCCAGTTCCTCTGGATTTGTGTACAAGCATAATTTTAGAAAC
TATCCGGCTTTATTTCCAAGACAAGCAAATGTTCCGGTAATTTGAGAGAGATTTCATCTGGTGAGCAA
TGAGGACCCCACTGTTGCGTCTTTAAATCCGCCTCAGAAAGCATCCTAGGGAGGGACCTGAGCTC
TTGGGGGGGTCCAGAACTGACCCTGCTTCCACCATGACTCTTCGCATCGGCCGGGGCCTGACTCT
CCAGATTGTCCAAGGCTGTATTGAAATGCAAACAACAGATGTAATTGGTAATTCTGGATACATGCA
GGATTTTAAATCAGGACGAGTGGCACAGTCGATTCTTAGACAAGCAGGGGTTGAAATGGAAAAGG
AACTTGACAAGGTTAACCTGTCCACAGATTATCAAGAGGTGTGGGTCACAAAAGGATTTAAATTTGT
CCTGTGAGTATGTCTTCCATGTGGCATGGCATTCCCAAATCAACAAATACCAGATATTGAAAGATG
CAATGAAGTCTGTCTAGAAAAATGCCTTAAACCAGATATAAATTCATTTCCTTTCTCTGCTCTCG
GGACAGGATTGATGGATTTGAAGAAGAGTACAGCAGCTCAGATAATGTTTGAGGAAGTTTTTGCA
TTTGCTAAAGAGCACAAGGAAAAACGCTAACTGTAAAGATTGTGATCTTTCCAGTAGATGTGGA
GACGTACAAGATTTTTTATGCTGAAATGACAAAAAGGTCCAACGAGCTGAATCTCAGCGGTAATA
GTGGTGCTTTAGCCCTGCAGTGGTCCAGTGGGGAGCAAAGAAGAGGCGGCCCTTGAAGCTGGATCT
CCTGCCATCAATCTCATGGGTGTAAAAGTGGGAGAGATGTGTGAGGCCAGGAATGGATTGAAAG
GTTGCTGGTCTCCCTGGACCACCACATCATTGAGAATAATCATATTCTCTATCTTGGGAAAAAAGA
GCACGACGTGCTGTCTGAGCTCCAGACCAGCACAAGAGTCTCCATTTTCAGAGACTGTCAGTCCAA
GAACGGCCACTTTGGAGATTAAAGGTCCCCAGGCTGACCTCATTGACGCAGTTATGAGGATTGAAT
GTATGCTGTGTGACGTTTCAGGAAGAAGTGGCAGGAAAAAGGGAGAAAAATCTTTGGAGCTTGTC
GGACAGGGGACCAACCAGCAAGAAAACTGGATAAAATGGAAGAATCGTACACATTTCAACGAT
ACCCAGCATCATTAACCTCAGGAACCTCAGGACCGAAAGAAACAGTTTGAAAAGTGTGGCTTGTGG
GTTGTGACAGGTGGAGCAGATAGACAATAAGGTGCTGCTGGCTGCCTTCCAAGAGAAGAAGAAAT
GATGGAAGAGAGGACGCCAAAGGGATCTGGGAGCCAAAGGTTGTTTCAGCAGGTCCACATCAGT
TCTGCAATACGGTGTGCAGAGTCGGCTTCCACAGAATGTATTTCGACATCCTATAACCCAGTTTATG
GAGCCGGCATATATTTACCAAGAGCCTCAAAAATCTAGCAGACAAGGTCAAGAAAACCTCAAGC
ACAGACAAGCTAATCTATGTGTTTGAGGCAGAAGTACTCACAGGGTCCTTCTGTGAGGGTAATTCC
TCAAAATATCATCCCTCCACCATTGAGTCTGGGGCCTTAGATGTCAATGACAGCGTAGTTGACAAT
GTTTCCAGCCCTGAAACCATTGTTGTTTTTAATGGCATGCAGGCCATGCCCCTGTACTTGTGGACTT
GCACACAGGATAGGACATTCTCACAGCATCCGATGTGGTACAGGACTACTCATCAGGACCAGGA
ATGGTCTCTTCGCTGCAGTCTGGGAATGGGTCTTAAATGGCAGCTCTGTTTAG

3' UTR:

TGTCTACATCAGTTTAAACAAGCAGAAGGGGTTGAGAGAAGTACAAAATGATAAATAACAGGTTA
CCTGTTTCAAGATGATGGGGTCACTAAAGGCACCGACCACACACTAGCATCATAGTGCCTTTGTCTT
TACCTCTGGGCTTGACTGGGCAGATGCCAGCTAAAACTTCCTCACTGTCTT

Fig. 2

4/23

TTCTATTTGATATCTTTTCATCTCCTTTCTATAGGTGACAGCAAGAATACTTTATATAGAACAAGGA
TATTTTTTTTCAAGCCTGTTATTTTCTAAAATGATAGCACAACTAGGACAACAGGATGATTTTCAGG
TTTTCTATATAATTTATAAAGTGCTTTGGATATCCAAATAAATCACCTTTGTCTGAGT

BAL mouse protein (shorter form):

MDTWAAAPAERPANNNSLEEHYRWQIPIKHNVFEILKSNESQLCEVLQNKFGCISTLSCPTLAGSSS
PAQRVFRRTLIPGIELSVWKDDLTRHVVDVAVNAANENLLHGSLAGSLVKTGGFEIQEESKRIIA
NVGKISVGGIAITGAGRLPCHLIHAVGPRWTVTNSQTAEILLKFAIRNILDYVTKYDLRIKTVAIPA
LSSGIFQFPLDLCTSIILETIRLYFQDKQMFNLREIHLVSNEDPTVASFKSASESILGRDLSSWGGP
ETDPASTMTLRIGRGLTLQIVQGCIEMQTTDVIGNSGYMQDFKSGRVAQSILRQAGVEMEKELDK
VNLSTDYQEVWVTKGFKLSCQYVFHVAWHSQINKYQILKDAMKSCLEKCLKPDINSISFPALGT
GLMDLKKSTAAQIMFEEVFATAKEHKEKTLTKIVIFPVDVETYKIFYAEMTKRSNELNLSGNSG
ALALQWSSGEQRRGGLAAGSPAINLMGVKVGEMCEAQEWIERLLVSLDHIIENNHILYLKGKE
HDVLSSELQTSTRVSISETVSPRTATLEIKGPQADLIDAVMRIECMLCDVQEEVAGKREKNLWSLS
GQGTNQQEKLDKMEESYTFQRYPASLTQELQDRKKQFEKCGLWVVQVEQIDNKVLLAAAFQE K
KKMMEERTPKGSGSQRLFQQVPHQFCNTVCRVGFHRMYSTSYNPVYGAGIYFTKSLKNLADKV
KKTSSDKLIYVFEAEVLTGSFCQGNSSNIIPPLSPGALDVNDSVVDNVSSPETIVVFNGMQAMP
LYLWTCTQDRTF SQHPMWSQDYSSGPGMVSSLQSEWVVLNGSSV

Fig. 2 (continued)

5/23

> BAL Human protein 819 aa vs.
> BAL Mouse protein 826 aa
scoring matrix: , gap penalties: -12/-2
61.5% identity; Global alignment score: 3158

```

      10      20      30      40      50      60
610015 MDFSMVAGAAAYNEKSETGALGENYSWQIPINHDFKILKNNERQLCEVLQNKFGCISTL
      :: . ::: :. .... :: : ::::: : ::::: : ::::: : ::::: :
      MD----TWAAAPAERPANNSLEEHYRWQIPIKHNVFEILKSNEQLCEVLQNKFGCISTL
      10      20      30      40      50

      70      80      90     100     110
610015 VSPVQEGNSKSLQ-VFRKMLTPRIELSVWKDDLTTTHAVDAVVNAANEDLLHGGGLALALV
      :. :.. : :.. : : : ::::: : ::::: : ::::: : ::::: : ::::: :
      SCPTLAGSSSPAQRVFRRTLIPGIELSVWKDDLTRHVVDVVNAANENLLHGSGLAGSLV
      60      70      80      90     100     110

      120     130     140     150     160     170
610015 KAGGFEIQEESKQFVARYGKVSAGEIAVTGAGRLPCKQIIHAVGPRWMEWDKQGCTGKLQ
      : ::::: : ::::: : ::::: : ::::: : ::::: : ::::: : ::::: :
      KTGGFEIQEESKRIIANVGKISVGGIAITGAGRLPCHLIHAVGPRWTVTNSQTAEILLK
      120     130     140     150     160     170

      180     190     200     210     220     230
610015 RAIVSILNYVIYKNTHIKTVAIPALSSGIFQFPLNLCTKTIVETIRVSLQKPMMSNLKE
      :. : ::::: : : ::::: : : ::::: : : ::::: : : ::::: : : ::::: :
      FAIRNILDYVTKYDLRIKTVAIPALSSGIFQFPLDLCTSIILETIRLYFQDKQMFGNLR
      180     190     200     210     220     230

      240     250     260     270     280     290
610015 IHLVSNEOPTVAAFKAASEFILGK---SELQETTP--SFNAMVVNNLTQIVQGHIEWQ
      : ::::: : ::::: : : : : : : : : : : : : : : : : : : : : : :
      IHLVSNEOPTVASFKSASESILGRDLSSWGGPETDPASTMTLRIGRGLTLQIVQGCIEMQ
      240     250     260     270     280     290

      300     310     320     330     340     350
610015 TADVIVNSVNPHTITVGPVAKSILQQAGVEMKSEFLATKAKQFQRSQLVLVTGKGNLFCK
      : ::::: : : : : : : : : : : : : : : : : : : : : : : : : :
      TTDVIGNSGYMQDFKSGRVAQSILRQAGVEMEKEL--DKVNLSTDYQEVWVTGFKLSCQ
      300     310     320     330     340     350

      360     370     380     390     400     410
610015 YIIYHVLWHSEFPKPQILKHAMKECLEKCIEQNITSISFPALGTGNMEIKKETAAEILFDE
      : ::::: : : : : : : : : : : : : : : : : : : : : : : : : :
      YVFHVAWHSQINKYQILKDAMKSCLEKCLKPDINSISFPALGTGLMDLKKSTAAQIMFEE
      360     370     380     390     400     410

      420     430     440     450     460     470
610015 VLTFAKDHVKHQLTVKFVIFPTDLEIYKAFSSEMAKRSKMLSLNNYS---VPQSTREEKR
      : ::::: : : : : : : : : : : : : : : : : : : : : : : : : :
      VFVFAKEHKEKTLTVKIVIFPVDVETYKIFYAEMTKRSNELNLGNSGALALQWSSGEQR
      420     430     440     450     460     470
```

Fig. 3

SUBSTITUTE SHEET (RULE 26)

	480	490	500	510	520	530
610015	ENGLEARS	PAINLMGF	NVEEMYE	AHAWIQ	RILSLQ	NHHIENN
 ::	.. ::
-	RGGLEAG	SPAINLM	GVKVGEM	CEAQEW	IERLLV	SLDHIIENN
	480	490	500	510	520	530
	540	550	560	570	580	590
610015	KTSSVS	SITEIIS	PGRTELE	IEGARAD	LIEVVM	NIEDMLCK
	.. ::	.. :: ::
-	TSTRVSI	SETVSP	RATATLE	IKGPQAD	LIDAVM	RIECMLCD
	540	550	560	570	580	590
	600	610	620	630	640	650
610015	TIQQOK	TQDEMKE	NIIFLKC	VPVPPT	QELLDQ	KKQFEK
	: ::
-	TNQQEK	L-DKME	ESYTFQ	RYPASLT	QELQDR	KKQFEK
	600	610	620	630	640	650
	660	670	680	690	700	710
610015	KKMMEE	KLHRQP	VSHRLF	QQVPYQ	FCNVVC	RVGFMYS

-	KKMME	ERTPKG	SGSQRL	FQQVPH	QCNTVC	RVGFHRM
	660	670	680	690	700	710
	720	730	740	750	760	770
610015	EKAKKI	SAAKLI	YVFEE	VLGTGF	FCQGHPL	NIVPPPL

-	DKVKKT	SSTDKL	IYVFEE	VLGTGS	FCQGNSS	NIIPPPL
	720	730	740	750	760	770
	780	790	800	810		
610015	IFSGMQ	AIPOYL	WTCTQE	--YVQ---	SQDYSSG	PMRPFAQ
 ::
-	VFNGMQ	AMPLYL	WTCTQD	RTFSSQ	HPMWSQ	DYSSGPM
	780	790	800	810	820	

Fig. 3 (continued)

7/23

Comparison of:

(A) 7486572155.52.67.361 > BAL Human

3244n

(B) 7486572155.52.67.362 > BAL Mouse

3024n

using matrix file: DNA, gap penalties: -16/-4

71.7% identity in 2916 nt overlap; score: 5444

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      370      380      390      400      410      420
-  CCCTACAAGTGCTCAGAGACTGGTGCTCTTGGAGAAAACATAGTTGGCAAATGCCCAT
  ::: : : : :: : : : : : : : : : : : : : : : : : : : : : : : :
-  CCCGCCGAAAGACCAGCCAACAATTCTCTTGAAGAACATTATAGATGGCAAATGCCCAT
      200      210      220      230      240      250

      430      440      450      460      470      480
-  AACCACAATGACTTCAAAATTTTAAAAATAATGAGCGTCAGCTGTGTGAAGTCCTCCAG
  :: : : : : : : : : : : : : : : : : : : : : : : : : : : : : :
-  AAACACAATGTCTTCGAAATTTTAAAGAGCAATGAGAGTCAGCTATGTGAAGTCCTCAA
      260      270      280      290      300      310

      490      500      510      520      530      540
-  AATAAGTTTGGCTGTATCTCTACCTGGTCTCTCCAGTTCAGGAAGGCAACAGCAAATCT
  : : : : : : : : : : : : : : : : : : : : : : : : : : : : :
-  AATAAGTTTGGATGCATCTCTACCTGAGCTGTCCAACCTCTAGCAGGGAGCAGCTCTCCT
      320      330      340      350      360      370

      550      560      570      580      590      600
-  CTGCA---AGTGTTTCAGAAAAATGCTGACTCCTAGGATAGAGTTATCAGTCTGGAAAGAT
  :: : : : : : : : : : : : : : : : : : : : : : : : : : : :
-  GCTCAGAGAGTCTTCAGAAGGACCCTGATCCCTGGGATAGAGTTATCTGTCTGGAAGGAT
      380      390      400      410      420      430

      610      620      630      640      650      660
-  GACCTCACCACACATGCTGTTGATGCTGTGGTGAATGCAGCCAATGAAGATCTTCTGCAT
  : : : : : : : : : : : : : : : : : : : : : : : : : : : :
-  GACCTTACCAGACACGTTGTTGATGCTGTGGTGAACGCAGCCAATGAAAACCTTTTGCAT
      440      450      460      470      480      490

      670      680      690      700      710      720
-  GGGGGAGGCCCTGGCCCTGGCCCTGGTAAAAGCTGGTGGATTGAAATCCAAGAAGAGAGC
  :: : : : : : : : : : : : : : : : : : : : : : : : : : : :
-  GGAAGTGGCCTGGCCGGAACCTTGGTGAAAACCTGGTGGCTTTGAAATCCAAGAAGAGAGC
      500      510      520      530      540      550

      730      740      750      760      770      780
-  AAACAGTTTGTGTCAGATATGGTAAAGTGTCAGCTGGTGAGATAGCTGTACGGGAGCA
  :: : : : : : : : : : : : : : : : : : : : : : : : : : :
-  AAAAGAATCATTGCCAACGTTGGTAAAATCTCAGTTGGTGGAATCGCTATCACCGGTGCG
      560      570      580      590      600      610

```

Fig. 4

SUBSTITUTE SHEET (RULE 26)

9/23

1250 1260 1270 1280 1290 1300
CATGATATTACAGTTGGACCTGTGGCAAAGTCAATTCTACAACAAGCAGGAGTTGAAATG
::
CAGGATTTTAAATCAGGACGAGTGGCACAGTCGATTCTTAGACAAGCAGGGGTTGAAATG
1100 1110 1120 1130 1140 1150

1310 1320 1330 1340 1350 1360
AAATCGGAATTTCTTGCCACAAAGGCTAAACAGTTTCAACGGTCCCAGTTGGTACTGGTGC
::
GAAAAGGAA---CTTGACA---AGGTTAACCTGTCCACAGATTATCAAGAGGTGTGGGTGC
1160 1170 1180 1190 1200

1370 1380 1390 1400 1410 1420
ACAAAAGGATTTAACTTGTCTGTAAATATATATACCATGTACTGTGGCATT CAGAATTT
:
ACAAAAGGATTTAAATTGTCCTGT CAGTATGTCTTCCATGTGGCATGGCATTCCCAAATC
1210 1220 1230 1240 1250 1260

1430 1440 1450 1460 1470 1480
CCTAACCTCAGATATTAAAACATGCAATGAAGGAGTGT TGGAAAAATGCATTGAGCAA
:
AACAAATACCAGATATTGAAAGATGCAATGAAGTCCTGTCTAGAAAAAATGCCTTAAACCA
1270 1280 1290 1300 1310 1320

1490 1500 1510 1520 1530 1540
AATATAACTTCCATTTCTTTCCCTGCCCTTGGGACTGGAAACATGGAAATAAAGAAGGAA
:
GATATAAATTCCATTTCTTTCCCTGCTCTCGGGACAGGATTGATGGATTTGAAGAAGAGT
1330 1340 1350 1360 1370 1380

1550 1560 1570 1580 1590 1600
ACAGCAGCAGAGATTTTGT TTGATGAAGTTTTAACATTTGCCAAAGACCATGTAAACAC
:
ACAGCAGCTCAGATAATGTTTGAGGAAGTTTTTGCATTTGCTAAAGAGCACAAGGAAAAA
1390 1400 1410 1420 1430 1440

1610 1620 1630 1640 1650 1660
CAGTTAACTGTAAAATTTGTGATCTTTCCAACAGATTTGGAGATATATAAGGCTTTCAGT
:
ACGCTAACTGTAAAGATTGTGATCTTTCCAGTAGATGTGGAGACGTACAAGATTTTTTAT
1450 1460 1470 1480 1490 1500

1670 1680 1690 1700 1710
TCTGAAATGGCAAAGAGGTCCAAGATGCTGAGTTTGAACAATTACAGTGT-----C
:
GCTGAAATGACAAAAAGGTCCAACGAGCTGAATCTCAGCGGTAATAGTGGTGCTTTAGCC
1510 1520 1530 1540 1550 1560

Fig. 4 (continued)

10/23

1720	1730	1740	1750	1760	1770
CCCCAGTCAACCAGAGAGGAGAAAAAGAGAAAATGGGCTTGAAAGCTAGATCTCCTGCCATC					
:	: :	: : :	: : : :	: : : : :	: : : : : :
CTGCAGTGGTCCAGTGGGGAGCAAAGAAGAGCGGCCTTGAAAGCTGGATCTCCTGCCATC					
1570	1580	1590	1600	1610	1620
1780	1790	1800	1810	1820	1830
AATCTGATGGGATTCAACGTGGAAGAGATGTAGTGAGGCCCACGCATGGATCCAAAGAAT					
:	: :	: : :	: : : :	: : : : :	: : : : : :
AATCTCATGGGTGTAAAGTGGGAGAGATGT-GTGAGGCCCAGGAATGGATTGAAAGGTT					
1630	1640	1650	1660	1670	1680
1840	1850	1860	1870	1880	1890
CCTGAGTCTCCAGAACCACCACATCATTGAGAATAATCATATTCTGTACTTGGGAGAAA					
:	: :	: : :	: : : :	: : : : :	: : : : : :
GCTGGTCTCCCTGGACCACCACATCATTGAGAATAATCATATTCTCTATCTTGGGAAAAA					
1690	1700	1710	1720	1730	1740
1900	1910	1920	1930	1940	1950
GGAACATGACATTTTGTCTCAGCTTCAGAAAAC TTCAAGTGTCTCCATCACAGAAATTAT					
:	: :	: : :	: : : :	: : : : :	: : : : : :
AGAGCACGACGTGCTGTCTGAGCTCCAGACCAGCACAAGAGTCTCCATTT CAGAGACTGT					
1750	1760	1770	1780	1790	1800
1960	1970	1980	1990	2000	2010
CAGCCCAGGAAGGACAGAGTTAGAGATTGAAGGAGCCCGGGCTGACCTCATTGAGGTGGT					
:	: :	: : :	: : : :	: : : : :	: : : : : :
CAGTCCAAGAACGGCCACTTTGGAGATTAAAGGTCCCCAGGCTGACCTCATTGACGCAGT					
1810	1820	1830	1840	1850	1860
2020	2030	2040	2050	2060	2070
TATGAACATTGAAGATATGCTTTGTAAAGTACAGGAGGAAATGGCAAGGAAAAAGGAGCG					
:	: :	: : :	: : : :	: : : : :	: : : : : :
TATGAGGATTGAATGTATGCTGTGTGACGTT CAGGAAGAAGTGGCAGGAAAAAGGGAGAA					
1870	1880	1890	1900	1910	1920
2080	2090	2100	2110	2120	2130
AGGCCTTTGGCGCTCGTTAGGACAGTGGACTATTCAGCAACAAAAACCCAAGACGAAAT					
:	: :	: : :	: : : :	: : : : :	: : : : : :
AAATCTTTGGAGCTTGT CAGGACAGGGGACCAACCAGCAAGAAAAA---CTGGATAAAAT					
1930	1940	1950	1960	1970	1980
2140	2150	2160	2170	2180	2190
GAAAGAAAATATCATATTTCTGAAATGTCTGTGCCTCCA ACTCAAGAGCTTCTAGATCA					
:	: :	: : :	: : : :	: : : : :	: : : : : :
GGAAGAATCGTACACATTTCAACGATACCCAGCATCATTA ACTCAGGA ACTTCAGGACCG					
1990	2000	2010	2020	2030	2040

Fig. 4 (continued)

[illegible]

Fig. 4 (continued)

```

3080      3090      3100      3110      3120      3130
CATATAATGAAGAAATTTTCTAGTATATAACGCAGGCCCTTTATTCTCTAAAATGATGA
::: :: : :: ::::: : :: :::: ::::: :::::
TATAGAACAAGGATATTTTCTT-----CAAGCCTGTTATTTCTCTAAAATGA---
2890      2900      2910      2920      2930

3140      3150      3160      3170      3180      3190
TAGTATAAAAATGTTAGGATAACAGAATGATTTTAGATTTTCCAGAGAATATTATAAAGT
::: : :::: ::::: ::::: ::::: ::::: : : :::: :::::
TAGCACAAAC----TAGGACAACAGGATGATTTTCAGGTTTCTATATAAT-TTATAAAGT
2940      2950      2960      2970      2980

3200      3210      3220      3230
GCTTTAGGTATGAAAATAAATCATCTTTGTCTGATT
::::: : :::: ::::: ::::: ::::: :
GCTTTGGATATCCAAATAAATCACCTTTGTCTGAGT
2990      3000      3010      3020

```

Fig. 4 (continued)

14/23

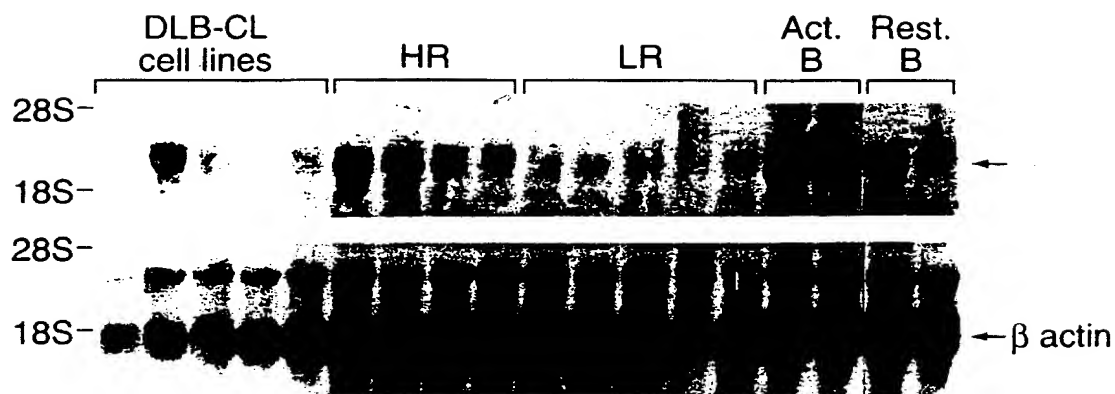


Fig. 5

15/23

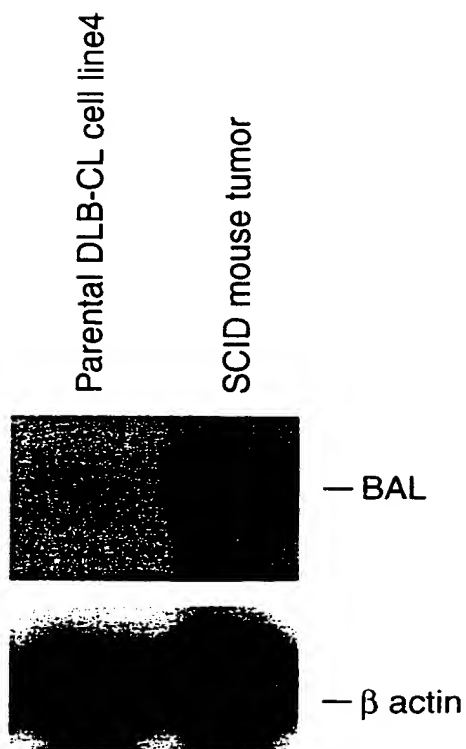


Fig. 6

16/23

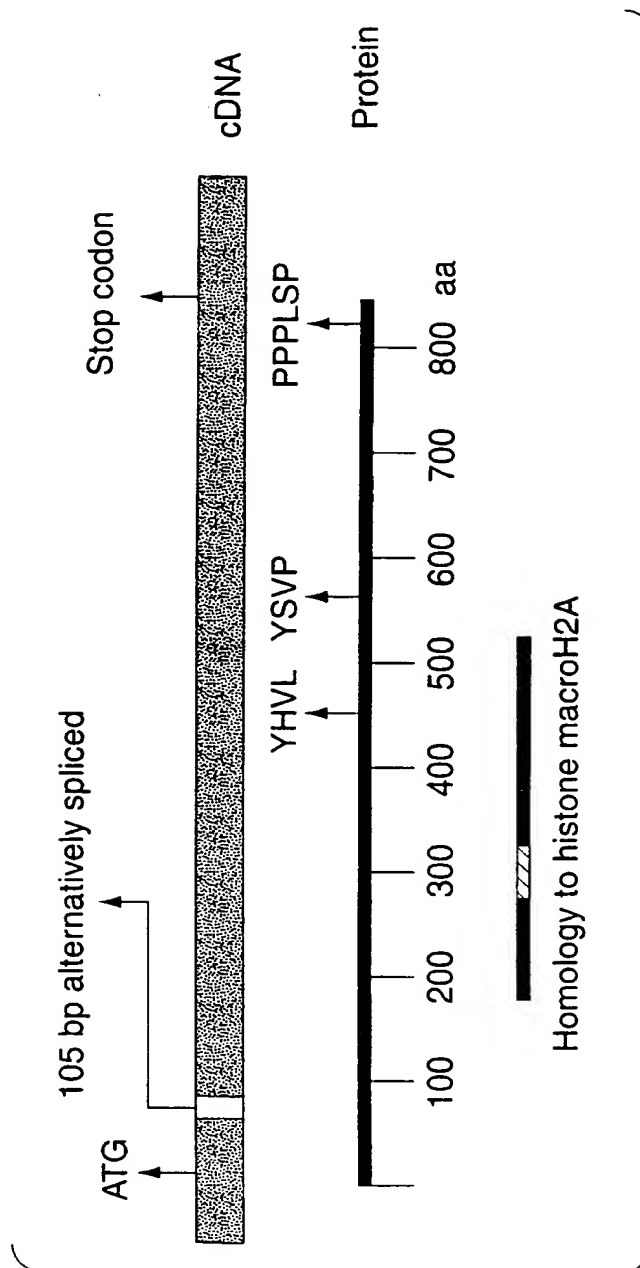


Fig. 7

17/23

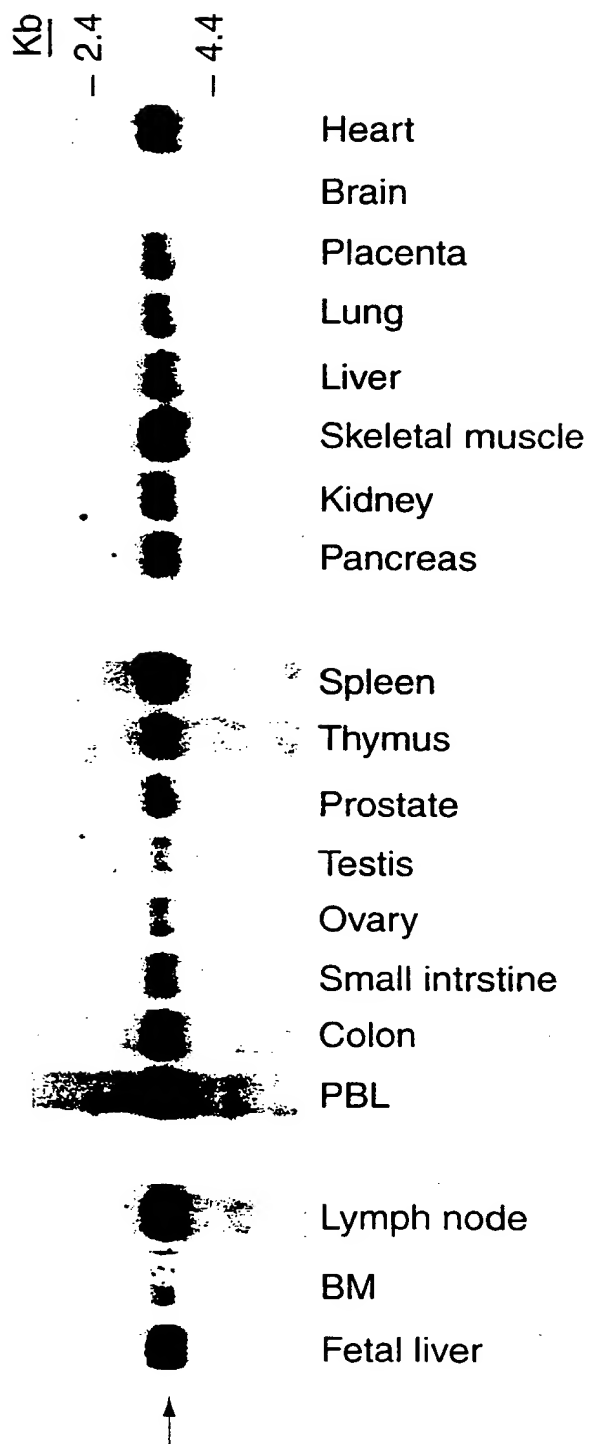


Fig. 8

18/23



Fig. 9

19/23

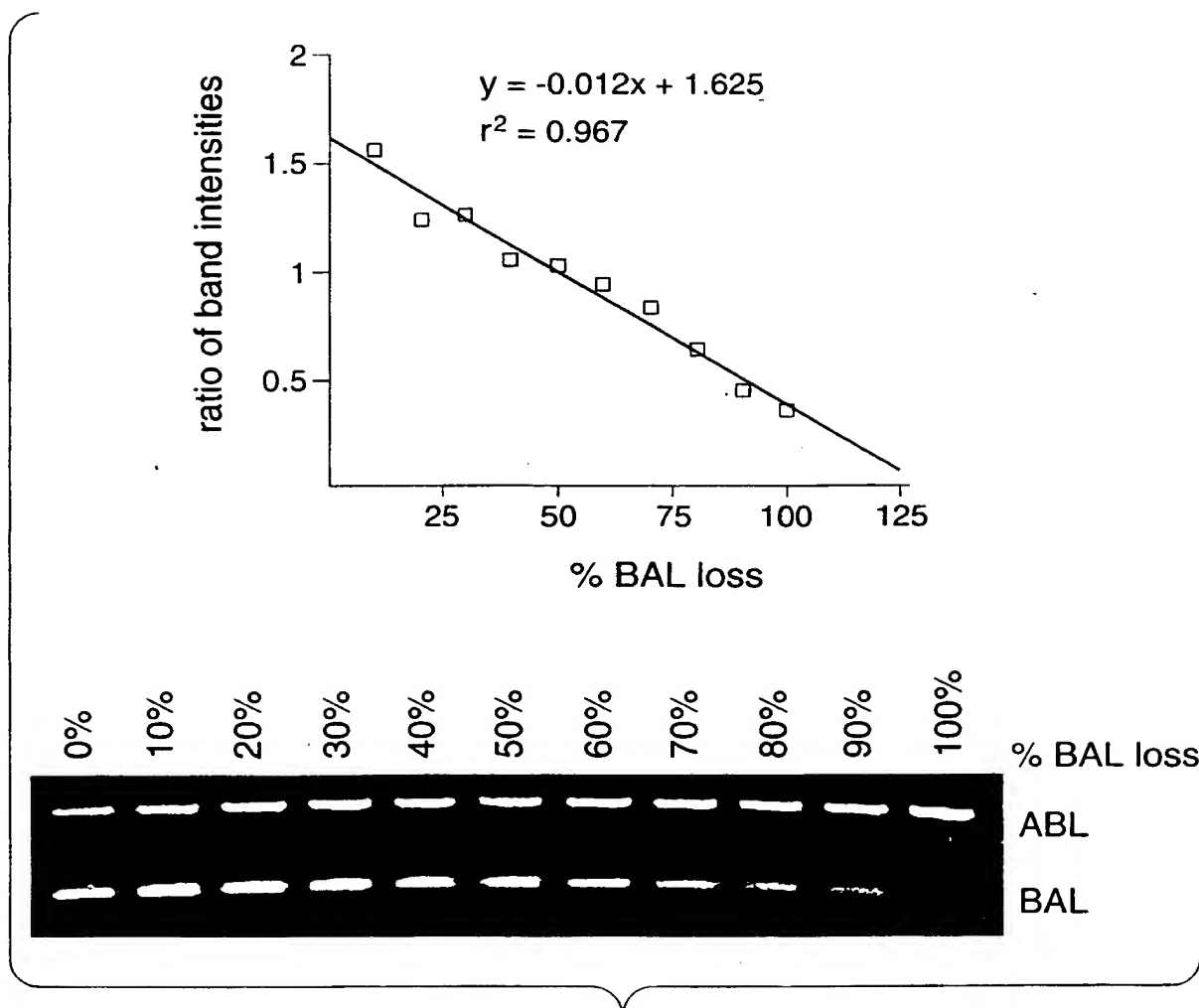
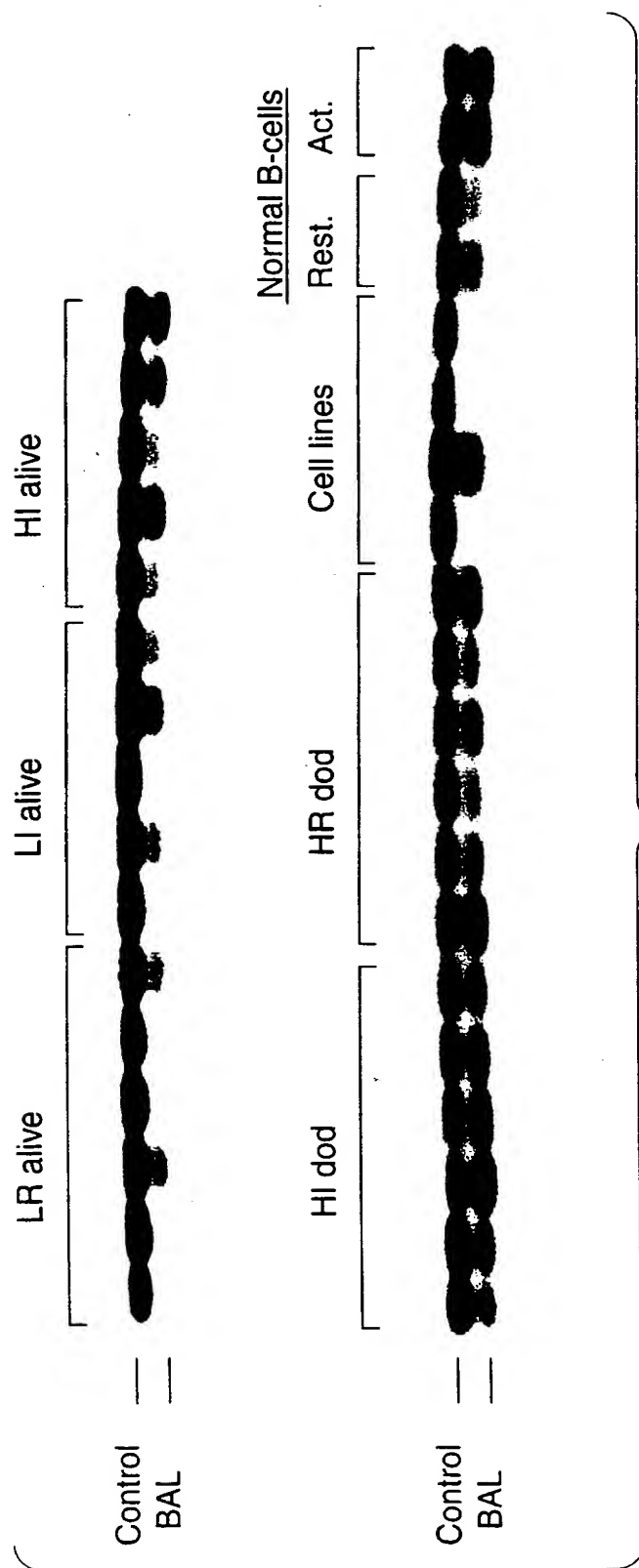


Fig. 10

20/23



21/23

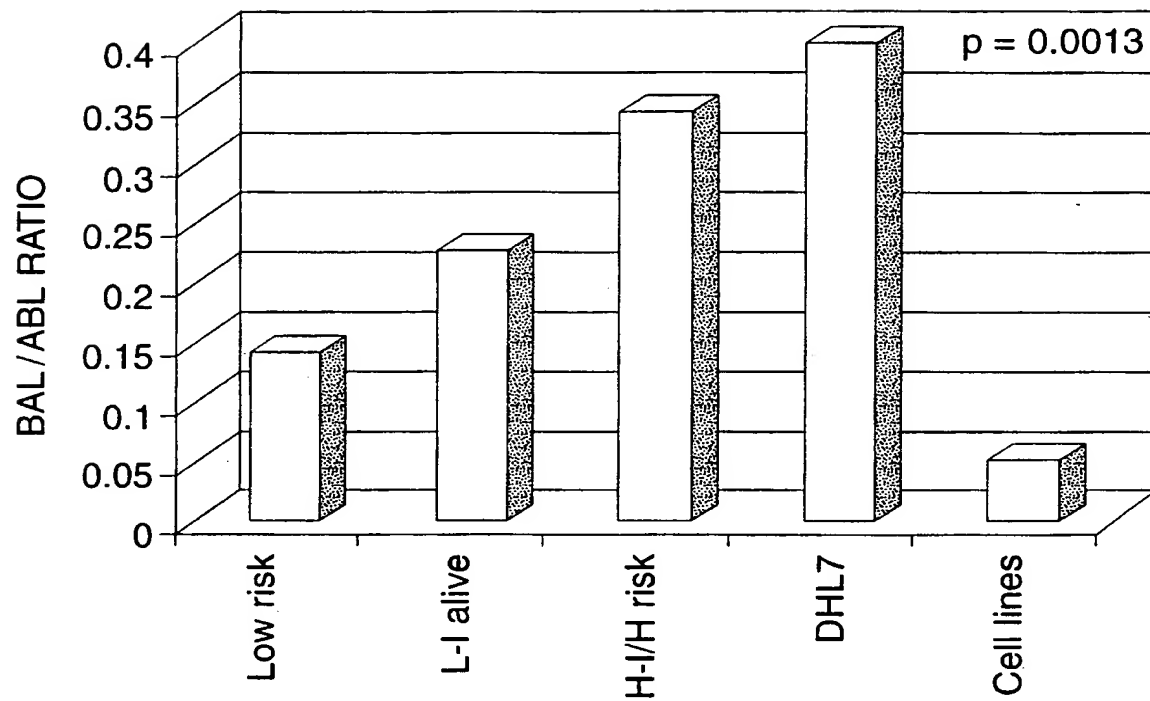


Fig. 12

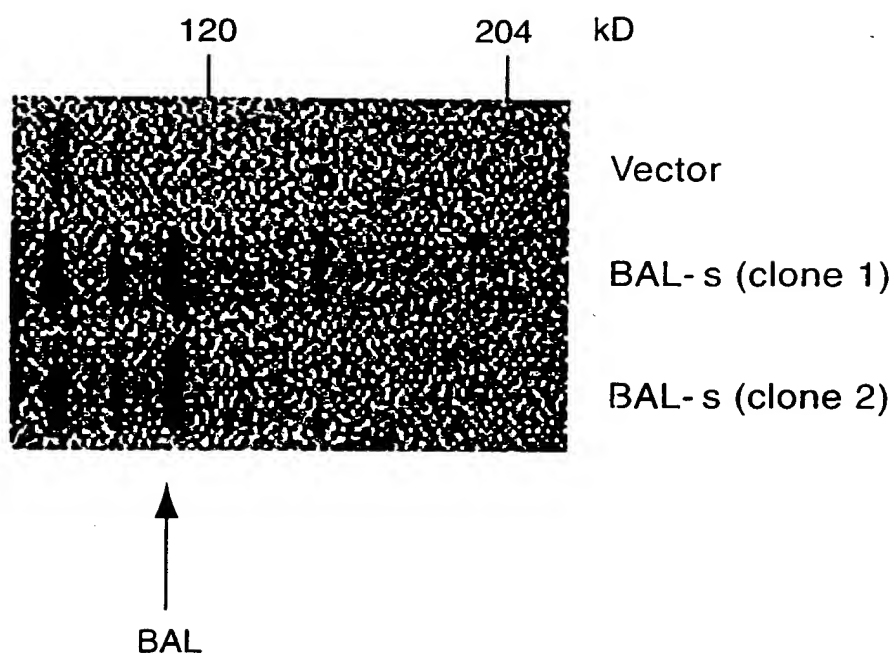


Fig. 13

23/23

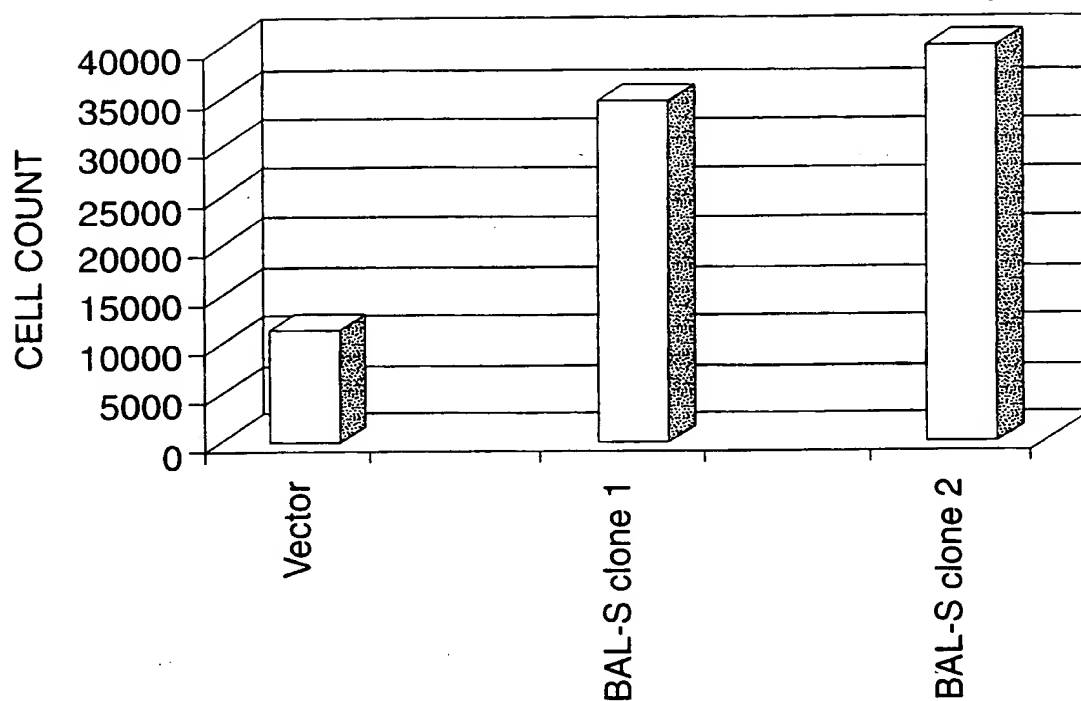


Fig. 14